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EXAMINER

KEMMERLE III, RUSSELL J

ART UNIT

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ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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### **DETAILED ACTION**

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

#### ***Claim Rejections - 35 USC § 112***

The previous rejection under 35 USC §112, second paragraph are withdrawn. Since the terms relating to the fluid flow through the openings is not recited in terms of active or positive steps, but instead appears to be intended use of how the invention would operate if a fluid were to flow through the housing, those limitations will not be given any weight.

#### ***Claim Rejections - 35 USC § 102***

Claims 21-24, 66, 71 and 77 are rejected under 35 U.S.C. 102(b) as being anticipated by Beshoory (US Patent 4,763,536).

Beshoory discloses a furnace tube, which includes fluid inlet and outlet means positioned on the same end of the tube (see Fig. 2). Beshoory discloses a tube having a fluid inlet **43** which is connected to a coil portion **45** (i.e., a conduit) which leads to a diffuser **46** where the fluid is released into the tube, generally to interact with a sample placed therein, the fluid is then removed from the tube through a fluid outlet **44** (Col 2 lines 43-47). It should be noted from Fig. 2 that fluid inlet **43** and fluid outlet **44** are both on the same side of the tube.

Beshoory discloses that an input fluid (such as the reaction gas) enter only through the fluid inlet **43** (that is, the first or third opening). Any gas (such as an inert gas) which enters through other holes (such as the apertures **33**) is a fluid separate

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from the input fluid. Further, Beshoory does not require the use of any gas other than the input fluid, and in such cases no fluid would enter the chamber except through fluid inlet **43**.

Beshoory further discloses that the apparatus extend to include a balance housing **20** and a bell jar **21** for receiving the balance end (Col 1 line 65 – Col 2 line 2). This entire structure could be considered the equivalent of the “housing” of the current claims, with a second end being the bell jar which would be closed and comprise no openings.

Referring to claim 22, Beshoory further discloses that the fluid flow be a gas flow through the tube (Col 2 lines 43-50).

Referring to claim 24, Beshoory further discloses that the outer tube (i.e., part of the housing) can be made of quartz or other suitable materials (Col 2 lines 2-5).

Thus, Beshoory discloses, or reasonably suggests, every limitation of claims 21-24, and thus anticipates the claims.

Referring to claim 50, it appears based on (Fig 2) that the conduit and housing are concentric shapes (that is, they share a common center based on the center of the conduit structure as a whole, not the center of the passage where gas would flow through the conduit.

The limitations of claim 66 have been addressed above.

Referring to claims 71 and 77, the “bell jar” disclosed by Beshoory is known to those skilled in the art to have a dome shape.

***Claim Rejections - 35 USC § 103***

Claims 21-24, 42-58, 63-66 and 69-88 are rejected in the alternative under 35 U.S.C. 103(a) as being unpatentable over Beshoory.

Beshoory is relied upon as discussed above. In the alternative, if the entire body of Beshoory (including the balance housing and bell jar) are not considered the equivalent to the “housing” of the current invention, it would have been obvious to modify the method of Beshoory to achieve the limitations of the current invention.

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to have modified the tube **40** of Beshoory by placing the apertures **33** through the closed web **42** on the same side as the fluid input and output, **43** and **44**, leaving the opposing end closed with no holes (or placing these apertures on any of the other surfaces other than the opposite “second” surface). One of ordinary skill in the art would recognize that there are only a finite number of places where the sample beam and thermocouple could be inserted in to the tube of Beshoory. Absent a showing of unexpected results, it would have been obvious to try inserting them through openings at either the first or second end or other sides of the housing. In doing so there would no longer be a need to have the apertures on the second end of the housing, and that side could be closed

Referring to claim 42, Beshoory appears to disclose that the conduit form an annular ring around the interior portion of the interior chamber and defining portions of the interior chamber (Fig 2).

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Referring to claim 50, it appears based on (Fig 2) that the conduit and housing are concentric shapes (that is, they share a common center based on the center of the conduit structure as a whole, not the center of the passage where gas would flow through the conduit.

The limitations of claims 22-24, 43-49, 51-58, 66, 68, 69, 77, 87 and 88 have been discussed above in the rejection under 35 USC 102(b).

Referring to claim 63, 70, 72, 76, 78, 79 and 84, Beshoory discloses that the tube is undivided from the first to the second end (Fig. 2).

The limitations of claims 64, 65, 71 and 73 have been discussed above in the rejection under 35 USC 102(b).

Referring to claims 74, 80 and 85, Beshoory discloses that the housing be made entirely from quartz (Col 2 line 4-5).

Referring to claims 81-83, quartz is a translucent, crystalline, nonconductive material.

Referring to claims 75 and 86, it appears from Fig 2 that the second opening of Beshoory is closer to the second end than it is to the first end. However, in the alternative, it would have been obvious to one of ordinary skill in the art that the second opening could be moved along the length of the housing without having any effect on the operation of the device of Beshoory.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beshoory in view of the admitted prior art.

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Beshoory is relied upon as discussed above, but does not discuss what material the coil portion be made of (specifically does not mention that it be quartz), or that the coil portion be quartz welded to the quartz outer tube.

While Beshoory does not specifically disclose a material to be used for the coil portion, he does disclose that many other parts of the assembly are made from quartz including the outer tube (Col 2 lines 2-5) and the diffuser at the end of the coil portion (Col 2 lines 51-52). It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, that the coil portion be made of the same quartz material as the outer tube and the diffuser since that would reduce the amount of different materials in the system, and thus make it easier to ensure that the container is inert to the fluid being introduced and would not react with it.

While Beshoory does not say that the coil portion be attached to the outer tube by quartz welding, as applicant points out, such a process is known in the art as a method of joining two quartz pieces together (applicant's specification, pages 18-19, paragraph 43). It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to have used quartz welding to join the quartz coil portion to the quartz outer tube as a well known and understood method of attaching two pieces of quartz material.

***Allowable Subject Matter***

Claims 32-41, 59-62 are allowed for reasons already of record.

***Response to Arguments***

Applicant's arguments with respect to many of the claims have been considered but are moot in view of the rejections being withdrawn. Applicants' arguments that apply to rejections which have been maintained are addressed below.

Applicant argues that that the tube (40) of Beshoory is used as a housing when it is convenient and then later the entire system including the bell jar is referred to as the housing.

In the rejections under 35 USC §102(b), the only reference made to the housing is in considering the entire system a "housing" (tube plus bell jar). The tube is only considered the "housing" in completely different rejections under 35 USC §103, so there is no conflict between the two interpretations.

Applicants argue that the bell jar 21 would have an opening at the right most ("second") end as shown in Fig 1.

Fig. 1 shows a prior art system, not the system of Beshoory. Having the opening on the end of the bell jar and passing gas through the entire system is exactly the problem Beshoory is aimed at overcoming. Instead of that system, Beshoory teaches having the fluid input and out put on the same side of the system, so the opening on the bell jar as shown in the prior art would not be needed, or have any use. Further, Beshoory discloses that the inert gas input may be provided on the bell jar or on the housing (20) (Col 2 lines 56-57).



The remainder of Applicants' arguments regarding rejections under 35 USC §102(b) are directed at rejections which have been dropped, and so are considered moot.

Applicants argue with respect to claim 42 that Beshoory does not teach that the interior chamber comprises an undivided space because there are at least three inner spaces in Beshoory (inner tube, outer tube and bell jar).

Claim 42 is rejected only under 35 USC §103, where the housing of Beshoory is considered only to be the tube (40) of Beshoory, therefor the "housing" would be made of an undivided space.

Applicant argues that Beshoory does not disclose the housing is inserted into a furnace. However Beshoory refers to the outer tube (40) several times as a "furnace tube", one skilled in the art would understand that this was intended to be placed in a furnace during operation. Further, Beshoory describes the prior art system including how the furnace tube is place into a furnace (Col 1 lines 39-64).

Referring to claims 69, 74, 80 and 85, Applicants argue that Beshoory does not disclose the housing being made wholly of one material. Again, these claims are rejected only under 35 USC §103, where the housing of Beshoory is considered only to be the tube (40) of Beshoory, therefor the "housing" would be made of one material.

Applicants make similar arguments with respect to claims 81, 82 and 83. Again, these claims are rejected only under 35 USC §103, where the housing of Beshoory is considered only to be the tube (40) of Beshoory, therefor the limitations of those claims are met.

Applicants argue that the proposed change to Beshoory in the rejection under 35 USC §103 would require a substantial reconstruction and redesign and change the basic way under which Beshoory operates.

This is not found to be persuasive because a purge gas could be pumped in from any location on the housing and serve to purge the housing. The gas would not be required to perform any special or unexpected feats through the housing, simply overfilling it with inert gas would drive out any reaction gas as is known in the art.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RUSSELL J. KEMMERLE III whose telephone number is (571)272-6509. The examiner can normally be reached on Monday through Thursday, 7:00-5:00 EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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